

NOTES FROM THE AUSTRALIAN MUSEUM.

A CONTRIBUTION TO THE KNOWLEDGE OF THE
FISH-FAUNA OF NEW GUINEA.

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The fishes described in the following paper form part of the collections obtained (1) by Mr. Froggatt during the recent expedition sent out by the Geographical Society of Australasia to New Guinea, and (2) by Mr. H. Smithurst, chief engineer of the Governor Blackall, during the official visit of the late Sir Peter Scratchley to the coast of that island. In both cases these gentlemen were fortunate in securing new and distinct species, though, as may be supposed, Mr. Froggatt, having the advantage of investigating a new and till then unexplored region, obtained the greater number of novelties. Of the twenty-five species brought home by the two expeditions no less than twelve are here described as new, namely,—*Ambassis gigas*, *Scolopsis macrophthalmus*, *Equula smithursti*, *Gobius concavifrons*, *Nematocentris novae-guineae*, *N. rubrostriatus*, *Arius froggatti*, *A. spatula*, *Hemipimelodus dayi*, *H. crassilabris*, *Engraulis scratchleyi* and *Corica papuensis*; of the remaining thirteen species ten have not, so far as we know, been recorded by previous authors from the south-east coast of New Guinea: these ten are as follows:—*Ambassis agrammus*, *Synagris notatus*, *Lethrinus mahsenoides*, *Gazza minuta*, *Eleotris porocephalus*, *E. butis*, *E. gyrimoides*, *Periophthalmus schlosseri*, *Chatöessus nasus*, and *Cyrtus gulliveri*, of which latter we give a full description on account of the many errors in that of Count Castelnau. The remaining three are *Toxotes jaculator*,

Gerres abbreviatus, and *Chatodon lineolatus*, for the last of which we are indebted to Mr. Peter Henderson, chief officer of the Governor Blackall, who picked it up at Port Moresby.

AMBASSIS GIGAS. *sp. nov.*

B. vi. : D. 7. 1/12 : A. 3/11 : V. 1/5 : P. 15 : C. 17 : L. lat. 39 : L. trans. 6/13.

Length of head $3\frac{1}{2}$, of caudal fin 4, height of body $2\frac{1}{2}$ in the total length. Diameter of eye $3\frac{5}{8}$ in the length of head, $\frac{3}{4}$ of a diameter from the end of snout, and $\frac{5}{9}$ of a diameter apart. Lower jaw the longer. Upper surface of head deeply concave, owing to an abrupt rise from above the last third of the eye to the root of the dorsal fin : the maxilla reaches to the middle of the orbit. Vertical limb of preopercle entire ; lower double edge serrated, the upper more coarsely so, the denticulations at the angles being very strong in both : interopercle finely serrated posteriorly ; pre-orbital with its lower edge serrated, and with a raised ridge bearing one or two serrations superiorly : two small spines at the postero-superior angle of orbit. Villiform teeth in the jaws, vomer, and palate, the outer row in the former enlarged ; no lingual teeth. Second dorsal spine very strong, rather longer than the head without the snout ; second anal spine much longer and stronger than the third, more than the head behind the eye. The last spine of the first dorsal is $\frac{5}{8}$ of the spine of the second dorsal, and is attached to it throughout $\frac{2}{3}$ of its own length. Part of the outer ventral ray is filiform, and reaches to beyond the origin of the anal : the pectorals are equal in length to the second dorsal spine : caudal forked. Lateral line continuous. Cheeks and opercles scaly. *Colors*, yellowish above the lateral line, each scale with a brown marginal streak interrupted in the middle, giving the fish a more or less banded appearance : sides and lower parts silvery : vertical fins dusky ; a deep black spot behind the tip of the second dorsal spine.

The specimen measures over $8\frac{1}{2}$ inches ; its register number is B. 9958.

Hab. Strickland River, New Guinea.

SCOLOPSIS MACROPHTHALMUS. *sp. nov.*

B. V. : D. 10/9 : A. 3/7 : V. 1/5 : P. 16 : C. 17 : L. lat. 38 :
L. trans. 4/15.

Length of head $3\frac{9}{10}$, of caudal fin $4\frac{3}{10}$, height of body $3\frac{1}{6}$ in the total length. Eyes large, their diameter $2\frac{3}{5}$ in the length of the head, $\frac{3}{4}$ of that of the snout, and $\frac{5}{8}$ of the flattened interorbital space. Cleft of the mouth somewhat oblique; the maxilla reaches to below the front margin of the orbit. Preorbital with a strong spine directed backwards, and two smaller ones in front of it. Vertical limb of the preopercle with strong simple denticulations, those on the produced angle being the coarsest; opercle with a distinct spine. Teeth in the jaws small, acute, and separated; those in front of the upper jaw rather longer and curved. Dorsal spines moderate, the third and fourth equal and longest, about $\frac{1}{3}$ of the height of the body, and little more than the diameter of the eye; the fifth, sixth, and seventh rays longer than the spines: third anal spine longer and as strong as the second, equal in length to the longest dorsal spine: pectorals as long as the head: the ventrals do not quite reach to the anal: caudal forked, the upper lobe rather the longer. Upper part of the head scaly as far as the front margin of the eyes. *Colors*, olive-brown, each scale silvery at the base, and with numerous round golden spots below the lateral line; occiput dark brown; cheeks silvery. A bluish tinge on the dorsal and anal fins; pectorals and ventrals brown; basal half of the lower caudal lobe with an orange tint; irides golden.

The specimen from which our description is taken was obtained at Port Moresby, and measures $8\frac{1}{4}$ inches in length. Its register number is B. 9965.

CYRTUS GULLIVERI.

Kurtus gulliveri, Casteln., Proc. Linn. Soc., N. S. W. ii., p. 233, and iii., p. 48.

D. 10/13 : A. 2/43 : V. 1/5 : P. 14 : C. 17.

Length of head $3\frac{4}{5}$, of caudal fin $4\frac{1}{5}$, height of body $3\frac{2}{5}$ in the total length. Diameter of eyes $6\frac{2}{3}$ in the length of the head, $1\frac{1}{2}$

in that of the snout, which is equal to the convex interorbital space. Upper profile of the head deeply concave, owing to a gibbous hump on the occiput which has a roughened bony edge, and immediately behind which the rudimentary dorsal spines commence. Jaws equal when the mouth is closed; maxilla reaches almost to the hind margin of the orbit. Preopercular edge double, both angles, but especially the lower, strongly spinous. Supraorbital ridge rough. Teeth villiform, very numerous in the jaws; in a narrow band on the vomer and palatines. The eight anterior dorsal spines rudimentary: ventrals reach to the anal rays; no horizontal spine between them: pectorals long, more than the head behind the front margin of the eye: caudal deeply forked. Scales minute, cycloid. Lateral line ceases below the fifth rudimentary dorsal spine. *Colors* diaphanous; a black spot on each side of the occipital hump, and a blotch of the same on the upper part of the opercle.

Length of specimen 15 inches; register numbr B. 9960.

Though from an examination of Count Castelnau's type specimen, which is fortunately contained in the collection of the Australian Museum (B. 9208), we have come to the conclusion that our fish is identical with his species, we have thought it best to redescribe it here, because of the numerous errors in the Count's description, which are so marked that, if we had not had the type specimen for comparison, we should assuredly have made a new species of our fish. Our specimen is from the Strickland River, New Guinea.

EQUULA SMITHURSTI. sp. nov.

D. 8/16 : A. 3/14 : V. 1/5 : P. 20 ; C. 19.

Length of head $4\frac{1}{6}$, of caudal fin $4\frac{1}{6}$, height of body $2\frac{2}{3}$ in the total length. Diameter of eye $\frac{1}{3}$ of the length of the head, equal to that of the snout, and also to the interorbital space. Dorsal profile much more convex than the abdominal; upper jaw very protractile, the length of the hinder limb being $7\frac{1}{3}$ in the total length; interorbital cavity lanceolate, twice as long as broad. Supraorbital edge smooth; two small spines above the antero-superior angle of the

eye, the inner one being the weaker, and placed further forward. Lower limb of the preopercle minutely serrated. Teeth small, closely set, in numerous rows. Dorsal spines weak, the first minute, the second greatly elongated, more than half the total length of the body, the fourth serrated at the base: second anal spine elongate, as long as the head: pectorals about equal to the distance between the snout and the hind margin of the eye: caudal forked. Scales minute, none on the chest or breast. Lateral line consists of 62 tubes, and ceases a short distance in front of the caudal fin. *Colors*, silvery, washed with blue on the back; sides of the head tinged with gold: snout, and a band from the upper angle of the eye to the opercle, black.

Length of type specimen inches; register number B. 9,962.

We are indebted to the energy of Mr. Henry Smithurst, chief engineer on board the Governor Blackall, for our specimen of this fine *Equula*. which he obtained at Hood Lagune, New Guinea, and with which we take this opportunity of connecting his name.

GObIUS CONCAVIFRONS. *sp. nov.*

D. 6. $1/10$: A. $1/8$: V. $1/5$: P. 17: C. 13: L. lat. 34: L. trans. 10.

Length of head $4\frac{1}{3}$, of caudal fin $4\frac{2}{3}$, height of body $5\frac{3}{4}$ in the total length. Diameter of eye $4\frac{1}{5}$ in the length of head, $1\frac{2}{3}$ in that of snout, and $\frac{2}{9}$ of a diameter apart; interorbital space convex: snout obtuse, its profile concave posteriorly. Head rather broader than high and twice as long as broad. Cleft of the mouth rather oblique, the lower jaw the longer. Maxilla barely reaches to the front margin of the eye. Several rows of teeth in both jaws, the outer row being considerably enlarged, especially in front. Third dorsal spine the longest, not so high as the body below it: the pectorals reach to the vent; the ventrals not so far: caudal moderately pointed; the anal commences beneath the fourth dorsal ray: anal papilla prominent, broader than long. Scales on the neck much smaller than those on the body; there are about 20 rows anterior to the dorsal fin. *Colors*, above light brown, many

of the scales with a dark spot posteriorly ; below grey : second dorsal and caudal spotted with dark brown, the latter tipped with the same.

The specimen measures four inches. Register number B. 9,950.

Hab. Strickland River

NEMATOCENTRIS NOVÆ-GUINÆÆ. *sp. nov.*

D. 1/5. 1/14 : A. 1/22-23 : V. 1/5 : P. 14 : C. 18 : L. lat. 35 : L. trans. 11 : Vert. 36.

Length of head $4\frac{1}{2}$, of caudal fin $5\frac{1}{8}$, height of body $2\frac{4}{5}$ in the total length. Eyes with an overhanging bony lid ; the diameter is $\frac{3}{10}$ of the length of the head, $\frac{5}{6}$ of that of the snout, and $\frac{5}{7}$ of the interorbital space, which is depressed, naked, and corrugated. Upper jaw slightly overhanging the lower ; maxilla does not reach to the vertical from the anterior margin of the eye. Profile in front of the first dorsal very slightly concave. Cleft of mouth angular, the lower jaw closing into the angle of the upper. The entire jaws both outside and inside, closely set with short sharp recurved teeth : a patch of similar teeth on the head of the vomer ; none on the palatines. Rays of the first dorsal filamentous, much longer than those of the second : anal commences opposite the origin of the first dorsal : ventrals inserted far behind the base of the pectorals, and reaching to the second anal ray : caudal forked. Scales with crenulated edges, covering the cheeks, opercles, and occiput behind the eyes, the anterior scales being very large and prominent ; there are 17 scales in front of the first dorsal fin. *Colors* brownish, washed with silvery, many of the scales on the upper half of the body with a transverse reddish or golden stripe ; the vertical fins are distinctly tinged with red, and there are indications of a round dark spot at the root of the caudal fin.

Described from a specimen $4\frac{3}{4}$ inches long ; register number B. 9,947. Young examples are not nearly so high in the body as the adult.

Hab. Strickland River.

NEMATOCENTRIS RUBROSTRIATUS. *sp. nov.*

D. $1\frac{1}{5}$ 1/11: A. 1/20: V. $1\frac{1}{5}$: P. 11: C. 16: L. lat. 32: L. trans. 11: Vert. 33.

Length of head $4\frac{1}{2}$, of caudal fin 5, height of body $3\frac{2}{5}$ in the total length. Eyes large, their diameter $2\frac{2}{3}$ in the length of the head, $\frac{4}{5}$ of a diameter from the end of the snout, and one diameter apart. Upper jaw slightly overhanging the lower; maxilla does not reach to the front margin of the eye. Profile in front of the first dorsal straight, or if anything slightly convex. Both jaws entirely covered with closely set short sharp recurved teeth; a similar patch on the head of the vomer. The rays of the second dorsal are equal in height to those of the first, which are not filamentous: the anal commences behind the origin of the first dorsal fin. Ventrals inserted far behind the base of the pectorals: caudal forked. Scales with crenulated edges, covering the cheeks, opercles, and upper part of the head to the middle of the interorbital space; the anterior occipital scales large and prominent; there are 15 scales in front of the first dorsal fin. *Colors*, silvery, with nine broad red longitudinal bands: the dorsals and anal dusky washed with red, the second dorsal having a basal row of brilliant crimson spots.

The specimen measures $2\frac{3}{4}$ inches; its register number is B. 9,949.

Hab. Strickland River.

ARIUS FROGGATTI. *sp. nov.*

D. 1/7. O: A. 19: V. 6: P. 1/11: C. 16.

Length of head $4\frac{2}{3}$, of caudal fin $4\frac{2}{3}$, height of body $5\frac{1}{3}$ in the total length. Diameter of eye $\frac{1}{5}$ of the length of the head, $\frac{5}{8}$ of that of the snout, which is obtuse, and equal to the breadth of the bony interorbital space: upper profile of the head straight, gradually rising to the origin of the dorsal fin. The height of the head is $\frac{2}{3}$ of its width, which is equal to the length excluding the snout: upper jaw a little longer than the lower; width of the gape of the mouth $3\frac{1}{4}$ in the length of the head. Median longitudinal groove lanceolate, distinct, and deep; occipital process

triangular, nearly as broad as long : posterior part of the head densely granulated, as also are the edges of the longitudinal groove to opposite the hinder margin of the eye ; there is also a granulose patch above the base of the pectoral. The maxillary barbel extends backwards to the base of the pectoral fin, the external mandibular not quite so far. Teeth in the lower jaw in two small angular patches, obtusely conical, and villiform ; in the upper in two similar oval patches : palatines with two small oval patches of villiform teeth anteriorly. The dorsal fin is as high as the body, its spine as long as the head behind the posterior nostril ; it is strongly granulated in front for two-thirds of its height, the remaining third and the entire back being weakly serrated ; the length of the base of the adipose dorsal equal to that of the rayed : pectoral spine very strong, considerably longer than the dorsal spine, slightly roughened on the outside and strongly denticulated on the inside ; they almost reach to the ventrals, which on their part just touch the anal fin : caudal deeply forked, the upper lobe the longer. There are numerous small round wart-like protuberances irregularly scattered over the sides of the body. *Colors*, steel-blue above, silvery below ; a faint white spot on the occiput, and another in the posterior angle of the base of the rayed dorsal : base of the pectoral inside pale blue.

Length of specimen $11\frac{3}{4}$ inches ; register number B. 9936.

We have much pleasure in dedicating this distinct species to Mr. Froggatt, on whom the whole burden of collecting the zoological specimens obtained during the late expedition of the *Bonito* seems to have fallen.

Hub. Strickland River.

ARIUS SPATULA. *sp. nov.*

D. $1\frac{1}{7}$. O : A. 20 : V. 6 : P. $1\frac{1}{9}$: C. 17.

Length of head $3\frac{9}{10}$, of caudal fin $5\frac{1}{3}$, height of body $6\frac{2}{3}$ in the total length. Diameter of eye $6\frac{1}{4}$ in the length of head, $\frac{3}{7}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head is $\frac{5}{8}$ of its width, which is equal to its length behind the middle of the eye. Upper jaw so much the longer that the lower closes

entirely inside the maxillary teeth ; the width of the gape of the mouth is $\frac{2}{7}$ of the length of the head. Median longitudinal groove shallow and indistinct ; occipital process narrow, the width of its base being one half of its length, the sides are convergent behind to immediately in front of the basal bone of the dorsal fin round which they bend outwards ; posterior part of the head granulated. The maxillary barbel reaches to the lower angle of the opercle, the external mandibular to the base of the pectoral. A broad band of obtusely conical villiform teeth on the jaws ; the vomerine teeth form two small square patches, about their own length apart, and contiguous with the divergent palatine bands, which are thrice as long as broad. The dorsal fin is higher than the body, the spine as long as the head excluding the snout ; it is roughened on its lower part anteriorly, weakly serrated on its upper half and posteriorly ; the length of the base of the adipose dorsal is $\frac{1}{3}$ more than that of the rayed fin : the pectoral spine is shorter than that of the dorsal, and is weakly serrated on both sides : the ventrals do not reach the anal fin : caudal deeply forked. *Colors*, brown above, yellowish below ; an oblong white spot on the middle of the occiput.

Length of the specimen described $12\frac{1}{3}$ inches ; register number B. 9,937.

Hab. Strickland River.

This species appears to be allied to Bleeker's *Arius* (*Hemiarius*) *stormi*, but it differs greatly in its comparative measurements, in the arrangement and shape of its vomerine and palatine teeth, shape of the occipital process, &c.

HEMIPIMELODUS DAYI. *sp. nov.*

B. V. D. 1/7. O : A. 20-21 : V. 6 : P. 1/10 : C. 17.

Length of head $4\frac{2}{3}$, of caudal fin $4\frac{1}{5}$, height of body $5\frac{3}{4}$ in the total length. Diameter of the eye $4\frac{1}{3}$ in the length of the head, $\frac{3}{4}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head nearly equals its width, which latter is equal to its length behind the centre of the orbit. Upper jaw the longer ; the extent of the gape of the mouth is $\frac{3}{8}$ of the length of head. Upper

posterior portion of the head closely granulated ; median longitudinal groove lanceolate, gradually broadening to behind the eyes, whence after a slight convergence it suddenly opens out into a large oval patch : occipital process narrow, its breadth at the base not half its length. Opercle wider than high. All the barbels short and hairlike, the maxillary just touching the opercle. A few short sharp teeth irregularly scattered over the jaws ; none on the vomer or palate. Dorsal fin higher than the body ; its spine is weakly serrated in front and behind, and is $\frac{5}{8}$ of the length of the head ; base of the adipose dorsal $\frac{3}{4}$ of that of the rayed fin. Pectoral spine much shorter than that of the dorsal, smooth externally, but strongly denticulated on the inside, not reaching to the ventrals, which themselves barely reach the anal : caudal deeply forked. *Colors*, steel blue above, silvery on the sides, white below, the different tints blending imperceptibly together : a small white spot on the top of the head in the groove ; fins light-colored.

The example described measures $9\frac{1}{2}$ inches, and is entered in the register as B. 9938 ; its mouth was completely filled with young ones, having the yelk-bag still attached ; the total length of the young fish is $\frac{2}{3}$ of an inch, while the diameter of the yelk-bag, round which it was partially curled, is more than $\frac{1}{3}$ of an inch at this stage of their existence ; the adipose fin extends from opposite the anal fin to the caudal, with which it is confluent ; the caudal also is but slightly forked. In a second example the young are much more developed, the yelk-bag has been absorbed, the caudal is more forked, and the adipose dorsal, though still large, has severed connection with it. In our smallest example, but 5 inches in length, the teeth are but little more numerous than in the specimen described. We name this fine species after Mr. Francis Day F.L.S., F.Z.S., &c., whose magnificent work on the fishes of India is indispensable to every student of Indo-Pacific ichthyology.

Hab. Strickland River.

HEMIPIMELODUS CRASSILABRIS. *sp. nov.*

D. 1/7. O : A. 18 : V. 6 : P. 1/12 : C. 17.

Length of head $4\frac{3}{4}$, of caudal fin $5\frac{1}{3}$, height of body $5\frac{1}{3}$ in the total length. Eyes small, surrounded by a fleshy lid, their diameter $5\frac{5}{6}$ in the length of head, $\frac{4}{9}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head is but little less than its width, which latter is equal to its length, excluding the snout. Upper jaw overhanging the lower ; the width of the gape of the mouth is $\frac{1}{4}$ of the length of the head ; lips very thick. Occiput very slightly granulated, and only on the central ridge : median longitudinal groove almost obsolete ; occipital process triangular, its breadth at the base nearly equal to its length. Opercle higher than wide. Barbels short, the maxillary not quite reaching to the gill-coverts : mandibular barbels close together on the same transverse plane. Teeth in the jaws minute, scarcely piercing the gum ; vomer and palatines toothless. Dorsal fin a little higher than the body ; its spine is roughened in front, weakly serrated behind, and $\frac{7}{10}$ of the length of the head ; the base of the rayed dorsal is $\frac{4}{5}$ of that of the adipose fin ; pectoral spine a little shorter, but stouter, than the dorsal spine, equal to the width of the head ; it is roughened outside, finely serrated inside ; they do not nearly reach the ventrals, which themselves do not reach the anal ; caudal deeply forked. *Colors*, brown above ; yellowish-white below, the pectoral region silvery ; top of the head with a round white spot between the eyes. Basal half of dorsal and anal fins yellowish-white, remainder of fins brown ; inner surface of pectorals blue at the base.

Length of specimen, $7\frac{3}{4}$ inches ; register number, B. 6961.

Hab. Strickland River.

ENGRAULIS SCRATCHLEYI. *sp. nov.*

D. 12 : A. 38 : V. 7 : P. 13 : C. 19 : L. lat. 43 : L. trans, 10.

Length of head $5\frac{1}{3}$, of caudal fin $4\frac{3}{4}$, height of body $4\frac{2}{3}$ in the

total length. Diameter of eye $\frac{2}{7}$ of the length of head, $\frac{1}{2}$ of a diameter from tip of snout, and $\frac{3}{4}$ of a diameter apart. Snout pointed and overlapping the mouth. Maxilla enlarged beyond the angle of the mouth, not reaching to the gill-openings; upper jaw much longer than the lower. Teeth small, equal in both jaws; in a long narrow band on the palatines, and in two small isolated patches on the vomer. The dorsal fin commences somewhat nearer to the end of the snout than to the base of the caudal fin, and far behind the insertion of the ventrals. The anal commences entirely behind the dorsal, its anterior rays being much the longest: pectorals long, reaching to behind the base of the ventrals; the upper ray not produced. Caudal deeply forked. Scales large, deciduous. There are 27 carinated scales along the abdominal edge, 11 of which are posterior to the root of the ventrals. The colors seem to have been bluish on the back, silvery on the sides and beneath, a steel-blue band separating the two; the dorsal and caudal fins are clouded at the margins.

The example from which our description is taken measures $5\frac{2}{3}$ inches, and its register number is B. 9951. We have given the above specific name to this fine Anchovy in memory of the late Sir Peter Scratchley, first High Commissioner of New Guinea, whose death at this critical period in the affairs of the young colony is greatly to be deplored.

Hab. Strickland River.

CORICA PAPUENSIS. *sp. nov.*

D. 12-14: A. 21: V. 8: P. 11: C. 20: L. lat. 40: L. trans 10: Vert 43.

Length of head, of caudal fin, and height of body equal, and $5\frac{2}{3}$ in the total length. Diameter of eye $2\frac{5}{6}$ in the length of head, $\frac{1}{2}$ a diameter from the end of snout, and $\frac{2}{3}$ of a diameter apart. Body compressed and elongate. Maxilla reaches fully to the middle of the orbit. The origin of the dorsal is exactly midway

between the point of the snout and the base of the tail, and rather behind the base of the ventrals; the anal commences far behind the termination of the dorsal; it has no detached rays; caudal forked, the lobes equal. Twelve serrated scales anterior to the ventral fins, the first of which is placed far behind the base of the pectorals; seven scales posterior to the ventrals. *Colors*, silvery, with the occiput and a broad longitudinal band steel-blue; tip of the upper caudal lobe blackish

The specimen described measures $3\frac{2}{3}$ inches; register number in the Australian Museum B. 9955.

Hab. Strickland River.